



## Early Journal Content on JSTOR, Free to Anyone in the World

This article is one of nearly 500,000 scholarly works digitized and made freely available to everyone in the world by JSTOR.

Known as the Early Journal Content, this set of works include research articles, news, letters, and other writings published in more than 200 of the oldest leading academic journals. The works date from the mid-seventeenth to the early twentieth centuries.

We encourage people to read and share the Early Journal Content openly and to tell others that this resource exists. People may post this content online or redistribute in any way for non-commercial purposes.

Read more about Early Journal Content at <http://about.jstor.org/participate-jstor/individuals/early-journal-content>.

JSTOR is a digital library of academic journals, books, and primary source objects. JSTOR helps people discover, use, and build upon a wide range of content through a powerful research and teaching platform, and preserves this content for future generations. JSTOR is part of ITHAKA, a not-for-profit organization that also includes Ithaka S+R and Portico. For more information about JSTOR, please contact [support@jstor.org](mailto:support@jstor.org).

apparently indicated degeneration, were observed. In the zygospores he finds that multiple fusion with degeneration of the supernumerary nuclei takes place. The fusion is preceded by a division. *Zygorynchus* offers a variation from other forms in the fewness of the nuclei which fuse (4 in one species) and in the tardiness of the fusion.

The process of zygospore formation in *Zygorynchus*, according to GRUBER,<sup>13</sup> shows some peculiarities which have not been observed in mucors heretofore. The zygospore arises at the point of contact between the terminal portion of an erect hypha and a lateral branch arising from the same hypha or rarely from a different hypha. At the point of contact the gametangia grow out from each hypha. Only the female gametangium is cut off by a wall at its base from the parent cell. Later a partly formed wall arises midway between the base and apex in the female gametangium, but this wall is rarely completed and soon disappears. The male gametangium remains in connection with the parent hypha. After the fusion of the gametangium a differentiated portion of the protoplasm of the male gametangium passes into the female gametangium, carrying with it 20-30 nuclei. The fusion of nuclei was not observed on account of their minuteness. The author believes that a multiple fusion takes place and that subsequently the fused nuclei divide to give the large number subsequently found in the zygote. He does not note the reduction in number observed by MOREAU. The resemblance of the manner of formation of the zygospore in this form to that of oospores suggests that *Zygorynchus*, which in other characteristics corresponds with the mucors, is akin to the oomycetes.—H. HASSELBRING.

**Cecidology.**—A very interesting and valuable contribution is a study of a citrus tree cecidium caused by *Sphaeropsis tumefaciens* Hedges by HEDGES and TENNY.<sup>14</sup> The organism was first isolated from lime tree knots from Jamaica in 1904. The knots vary in size from  $\frac{3}{8}$  to 3 inches, and are usually more or less spherical; they are light in color and smooth when young but become black and furrowed with age. The interior of the knot is hard and compact, while the outer part is soft and crumbling in character. They are frequently more or less covered with typical witches-broom growths. They occur on both old and young growths and at any season of the year, and eventually cause the death of the plant. The mycelium may grow in any tissue, but is confined to the intercellular spaces, but unfortunately the authors have not given a discussion of the structural characters of the malformations. The fungus penetrates the wood for considerable distances beyond the point of inoculation, thus making pruning an unsatisfactory treatment. Pycnidia

<sup>13</sup> GRUBER, E., Einige Beobachtungen über den Befruchtungsvergang bei *Zygorynchus Moelleri* Vuill. Ber. Deutsch. Bot. Gesells. 30:126-133. pl. I. 1912.

<sup>14</sup> HEDGES, FLORENCE, and TENNY, L. S., A knot of citrus trees caused by *Sphaeropsis tumefaciens*. Bull. no. 247. U.S. Dept. Agric. Bur. Pl. Industry. 1912.

may or may not be produced; spermogonia are produced, but perithecia and conidia have not been observed.

Another important contribution to our knowledge of American cecidology comes from COSENS,<sup>15</sup> of the University of Toronto. After a brief review of our present knowledge of cecidology, he discusses the results of his own investigations. The subdivisions are arranged with reference to the insects causing the galls, but the discussions are primarily botanical in character. The results of these studies confirm much of our previous knowledge and make valuable additions. The *Eriophyes* galls show a well defined series from simple indentations to well developed pouches, and from modifications of epidermis only to the palisade and mesophyll also. The modifications are those of degree rather than of kind. In the hemipterous galls the stimulation is from one side and is disseminated equally in all directions. The lepidopterous galls are characterized as a simple type. The glands are larger than in the normal tissues. The dipterous galls are extremely variable in degree of complexity and the glands are very abundant. The sawfly galls of the Hymenoptera show a great proliferation of tissue, with but very little differentiation. Tannin was especially abundant in the epidermis and bast and probably serves for the protection of the larvae. Other members of this order produce the most highly developed galls with very complicated structures. Probably the most vital part of this paper is the series of physiochemical experiments with the larvae, in which the author found that the larvae "secrete an enzyme, capable of changing starch to sugar, which acts on the starchy constituents of the nutritive zone and accelerates the rate of their change to sugar. The material thus prepared supplies nourishment for both the larva and the gall. The protoplasm of the latter is thus rendered unusually active, since it receives an abnormal quantity of available food material in a limited area. The hypertrophy and cell proliferation and probably also the appearance of vestigial tissue or other primary characters are the response of the protoplasm of the host to the additional food supply." The author also says that it is not necessary in all cases for the stimulus to be applied to the cambium, but that it may be applied to any actively growing tissue; that this stimulus acts on tissues at considerable distance from the point of application; that certain inquilines have the power of gall production to some extent.

A very brief paper on pistillody by LEWIS<sup>16</sup> shows the necessity for botanists to give more attention to the recording of the abnormal structures in plants. In this case both the anther and the filament were inflated and bore ovules, the anther being modified into a sessile leaflike structure with a stigmatose edge.

<sup>15</sup> COSENS, A., A contribution to the morphology and biology of insect galls. Trans. Canadian Inst. 11:297-387. pls. 13. 1912.

<sup>16</sup> LEWIS, I. W., Pistillody in *Argemone platyceras* Link and Otto. Torreyia 12:85-88. 1912.

Among the important foreign papers which are of some interest to botanists are the following: Two systematic papers by HOUARD<sup>17</sup> in which the author gives descriptions and notes based on the characters of the galls. Docters VAN LEEUWEN-REIJNVAAN<sup>18</sup> continue their very valuable descriptions of the galls of Java, describing 99 species. These descriptions are purely botanical and in most cases the species is not named, but is placed in such genus or family as may be indicated by the external characters of the cecidium. This is therefore merely the record and description of certain types of cecidia found on certain species of plants and becomes an important starting-point for future workers.—MEL T. COOK.

**Motile isogametes in the Chytridiales.**—KUSANO<sup>19</sup> has demonstrated in *Olpidium Viciae*, a new species parasitic on *Vicia unijuga*, that the free swimming zoospores sometimes conjugate much as in the lower green algae. Similar copulation was reported many years ago by FISCH in *Reesia*, which is closely related to *Olpidium*, but his account has not been generally accepted. KUSANO, however, not only followed the zygote to infection, but traced its cytological history through to the next generation of zoospores. Conjugation, which seems to occur only during the amoeboid intervals between active swarming, appears to be induced by a contact stimulus. There is a slight physiological differentiation among the zoospores in that not all of those which come together appear to have a sexual affinity, although one of such a mismated pair may often fuse with a third which comes into contact with them. Zoospores from old sporangia which have been prevented from discharging by lack of water copulate more freely than those which have recently matured. Conjugated or unconjugated zoospores may infect the host, one giving rise to resting spores, the other to zoosporangia. After encysting on the outside of the host, the young parasite penetrates the cell wall and escapes into the cell, where it is freely carried around by the rotation of the host cytoplasm, until it finally comes to rest near the nucleus. Though naked until nearly mature, it never undergoes amoeboid deformation as in *Reesia* and *Monochytrium*. The zoospores are discharged through very short wartlike exit beaks, of which four or five may develop on a single sporangium, though only one functions.

In its cytology this organism is so similar to *Monochytrium* as to make it evident that the two are very closely related, although in the latter the spores

---

<sup>17</sup> HOUARD, C., Les collections cécidologiques du laboratoire d'entologie du Museum d'Histoire Naturelle de Paris: l'herbier du Dr. Fairmaire. Marcellia 11:11-46. 1912; and Galles de Mayr et Muller. Marcellia 11:107-114. 1912.

<sup>18</sup> VAN LEEUWEN-REIJNVAAN, W. DOCTERS and J., Einige gallen aus Java. VI. Marcellia 11:49-100. 1912.

<sup>19</sup> KUSANO, S., On the life history and cytology of a new *Olpidium* with special reference to the copulation of motile isogametes. Jour. Coll. Agric. Tokyo 4:141-199. pls. 15-17. fig. 1. 1912.